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Effects of prescribed fire on birds and vegetation in the Borderlands Project Area: preliminary analysis of pre-burn data

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Effects of a prescribed fire on birds and vegetation in the Borderlands Project Area:

preliminary analysis of pre-burn data

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INTRODUCTION

Semi-desert scub and grassland of extreme southeastern Arizona and adjacent New Mexico (Cochise County, AZ and Hidalgo County, NM) support a diverse assemblage of plant and animal species and a cattle-grazing economy. Ranchers and public land managers belonging to the Malpai Borderlands Group believe that fire is needed to improve grazing and return the vegetation toward its pre-settlement character, in which grasses were likely more prominent and fires more frequent. Until recently most fires have been suppressed, notwithstanding that fires have trouble burning here due to lack of fuel (in part a result of continuous grazing). A prescription burn in the Baker Canyon area, preceded by a 4-year cessation of grazing, was planned cooperatively by the U.S. Forest Service (Coronado National Forest), the Malpai Borderlands Group, and a primary owner of land in and near Baker Canyon (Drummond Hadley), and took place 28-29 June 1995.

It is important to measure and interpret effects of the burn on wildlife and vegetation, in order to evaluate the appropriateness of prescribed burns locally and in similar habitats of Arizona and New Mexico. Comparison of fire effects at Baker with similar research in other semi-desert grasslands in the region is also desirable.

This study seeks to determine how the burn affects breeding bird populations in Baker Canyon, and to relate pre- and post-fire bird abundances to changes in vegetation. Here I provide a *preliminary analysis* of some of the data collected prior to and one month after the June 1995 burn.

METHODS

Study area and transect locations

The Baker Canyon prescribed burn area occupies approximately 6,000 acres (2,430 hectares) in southeastern Cochise County, Arizona and southwestern Hidalgo County, New Mexico (Fig. 1). It is bounded on the south by Guadalupe Canyon (1-2 km north of the international boundary with Sonora) and is bisected by Baker Creek, which drains southward for 9 km from its source near Bunk Robinson Peak to Guadalupe Canyon. The area is shown on two US Geological Survey 7.5' topographic maps: Guadalupe Canyon, Arizona-New Mexico-Sonora, and Guadalupe Spring, New Mexico-Arizona. Topography is hilly, with elevations from 4,250 feet (1,288 m) to 4,700 feet (1,424 m) along our transects.

A narrow corridor of riparian vegetation borders Baker Creek. Chihuahuan desertscrub vegetation (Brown 1982a) is prominent west of Baker Creek on exposed limestone. Other upland areas are best described as semi-desert grassland (Brown 1982b) in which honey mesquite (*Prosopis glandulosa*) and one-seed juniper (*Juniperus monosperma*) are prominent and shrub species diversity is fairly high. The region is just west of the continental divide and includes plants associated with both the Chihuahuan and Sonoran Deserts, as well as other biotic provinces. Wentworth's (1981) inventory at the Mule Mountains, Cochise County, is a useful reference.

I established 4 transect lines in the southern half of the burn area (Figure 2), each with 5-10 stations at which birds were counted and (3 of 4 lines) vegetation was sampled. Stations were 300 meters apart on lines A-C, with variable distances on line D. The stations were permanently but discreetly marked with numbered aluminum or steel tags attached to trees or rebar stakes, and locations were carefully described and marked on the Guadalupe Canyon topographic map.

Characteristics of transect lines are as follows. Two lines ran east-west (line B) or northeast-southwest (line A) for 2-3 km, crossing Baker Creek at the midway point, and ascending the scrub-grassland hills on either side (Fig. 2). These lines followed

predetermined bearings across-country, thus largely avoiding man-made edge effects. A third line (C) followed Baker Creek for 3 km, sampling riparian vegetation and adjacent scrub-grassland. A fourth line (D) followed an old road from Guadalupe Canyon northeast toward Baker Spring for 2 km, passing an old corral and dry tank. The 5 stations on this line were green metal posts 300-500 m apart, marking "photo points" established by Pete Sundt and Raymond Turner of Gray Ranch. We did not sample vegetation at these points, but pre-burn photographs are available for reference.

Bird counts

We used standard point count methods that rely heavily on sound detection, and modified them to deal with an anticipated seasonal decline in territorial singing. Counts began within 30 minutes of sunrise and ended no later than 4 hours after sunrise. In late June 1995 (23-26 June), a week prior to fire ignition day, lines A, B, and C were counted once by a team of two observers and line D was counted by one observer. We anticipated that singing rates of territorial birds would have declined from a presumed peak in April or May, and therefore departed from the usual 5-minute listening period as follows. We first listened for 7 minutes, recording species identity, age, and sex of each bird detected, detection method (visual, song, call, other), and approximate distance from station. We then played a tape recording of a Western Screech-Owl for 7 minutes; observers hid in nearby vegetation and noted all birds heard and seen, especially those which approached the tape or responded vocally to it. During counts using the owl tape, the observer's view was more restricted compared to standard counts, and less attention was paid to the "background" singing of common species (such as Gambel's Quail, Mourning Dove, Northern Mockingbird) which ignored the tape. Weather conditions were recorded at each station during counts (temperature, wind, cloudiness).

Vegetation sampling

On two transects (A, B) we sampled vegetation and ground cover in 0.1-hectare circular areas centered on each station (the count point for birds). A 36-meter line was centered on the station, following a randomly-determined bearing. At 1-meter intervals we recorded presence of ground cover (by rock, bare soil, grass, forbs, leaf-herb litter, or dead woody debris) and presence and species identity of woody plants at various heights above ground (0-1 m, 1-2 m, 2-5 m; no canopy higher than 5 m was encountered on our sample lines in scrub-grassland). These measures allowed estimates of the relative abundance of grass, woody plants, and bare ground or rock. In addition, on line C as well as lines A and B, we identified all shrub and tree species in the plot.

RESULTS

Diversity, relative abundances, and detectabiliy of birds

Most resident bird species sang frequently, despite the fact that we counted birds late in the breeding season (23-26 June) and during hot weather (minimum and maximum temperatures at Douglas, AZ ranged from 53 F to 100 F). Several uncommon (?) species were recorded only during counts using the owl tape: Black-chinned Hummingbird, Broad-tailed Hummingbird, Acorn Woodpecker, Plain Titmouse, Bushtit, Bell's Vireo, Hooded Oriole, Scott's Oriole. Of the common species, three were particularly responsive to the owl tape: Phainopepla, Ash-throated Flycatcher, and Bewick's Wren.

The number of species per transect ranged from 18 (the 5-station transect, D) to 33 (the 10-station riparian transect) (Table 1). The 10 most common species, which occurred on all 4 transects, are listed in Table 2. Northern Mockingbirds, the most common species, were singing vigorously and probably still breeding. Phainopeplas, on the other hand, had probably immigrated from desert breeding areas to feed on barberries, which were ripe and occurred on all transects, especially the riparian one. Phainopeplas were conspicuous on morning counts, flycatching in groups. One month after the counts and the burn, no Phainopeplas were detected; they had probably emigrated.

Future analyses of abundance will incorporate data on distance at which birds were detected.

Vegetation

Lines A and B, which sampled the most common Baker Canyon habitats of mixed desertscrub and grassland, are described in Table 3. Percent ground cover by rock or bare ground totalled 33-44%. Cover by grass, forbs, or leaf-herb litter jointly averaged 41-45%. Thus, the ground was rather open.

There was substantial cover by woody plants at 0-1 meters above ground (33-49%) and 1-2 m (17-25%) (Table 3). Shrub species diversity was fairly high, totalling 29-35 species per transect (Table 4). Species common on 3 transects (A, B, C) included littleleaf sumac (*Rhus microphylla*), one-seed juniper (*Juniperus monosperma*), catclaw mimosa (*Mimosa biuncifera*), and honey mesquite (*Prosopis glandulosa*).

DISCUSSION

(Deferred pending further analysis of data.)

ACKNOWLEDGMENTS

I began this study while employed as a post-doctoral wildlife biologist at the Rocky Mountain Forest and Range Experiment Station, Flagstaff, Arizona, Research Work Unit 4251. I thank William M. Block for assigning me to the study and Carl Edminster for funding it. Brian Power, Douglas (AZ) district ranger (Coronado National Forest), introduced me to the country and supported the study in many ways. Ron Bemis, Natural Resource Conservation Service (Douglas), described vegetation of the study area and suggested transect locations. Gary Helbig (wildlife biologist, Coronado National Forest, Douglas) shared information on birds of Baker and Guadalupe Canyons. Bird counting and vegetation sampling methods were adapted from protocols developed by William M. Block. Drummond Hadley and family generously provided lodging for our field crew at Guadalupe Ranch, as did Arnie Moorhouse in Douglas. The Department of Life Sciences, Indiana State University, provided computer resources.

Most of all, I thank Sandy Anderson and Stuart Healy for carrying out bird counts and vegetation sampling with enthusiasm and great skill in rugged terrain and midsummer heat.

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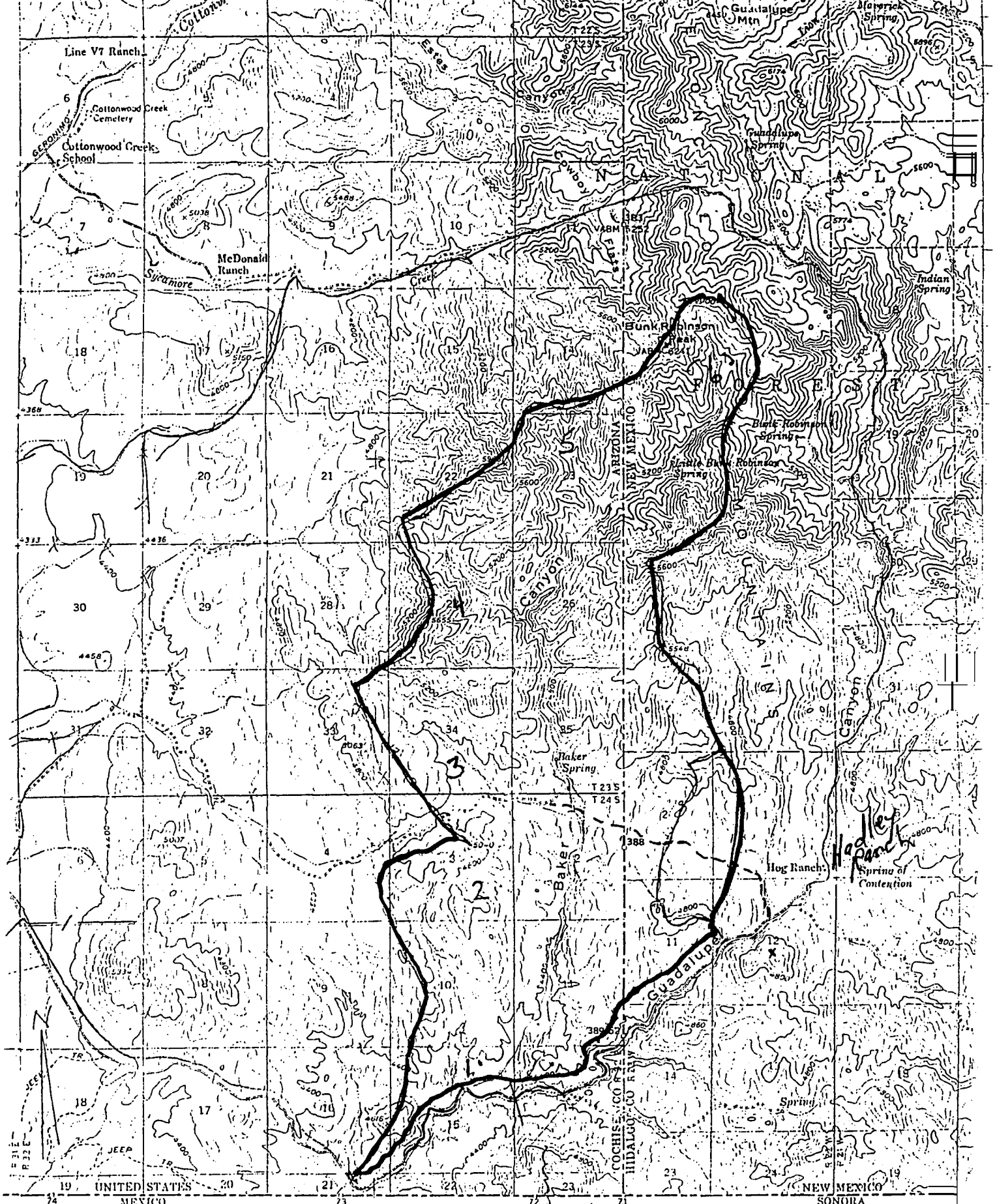

Figure 1. Baker Canyon corrn
Burn area.

Ranger Trail

Note real line
W Hog Ranch

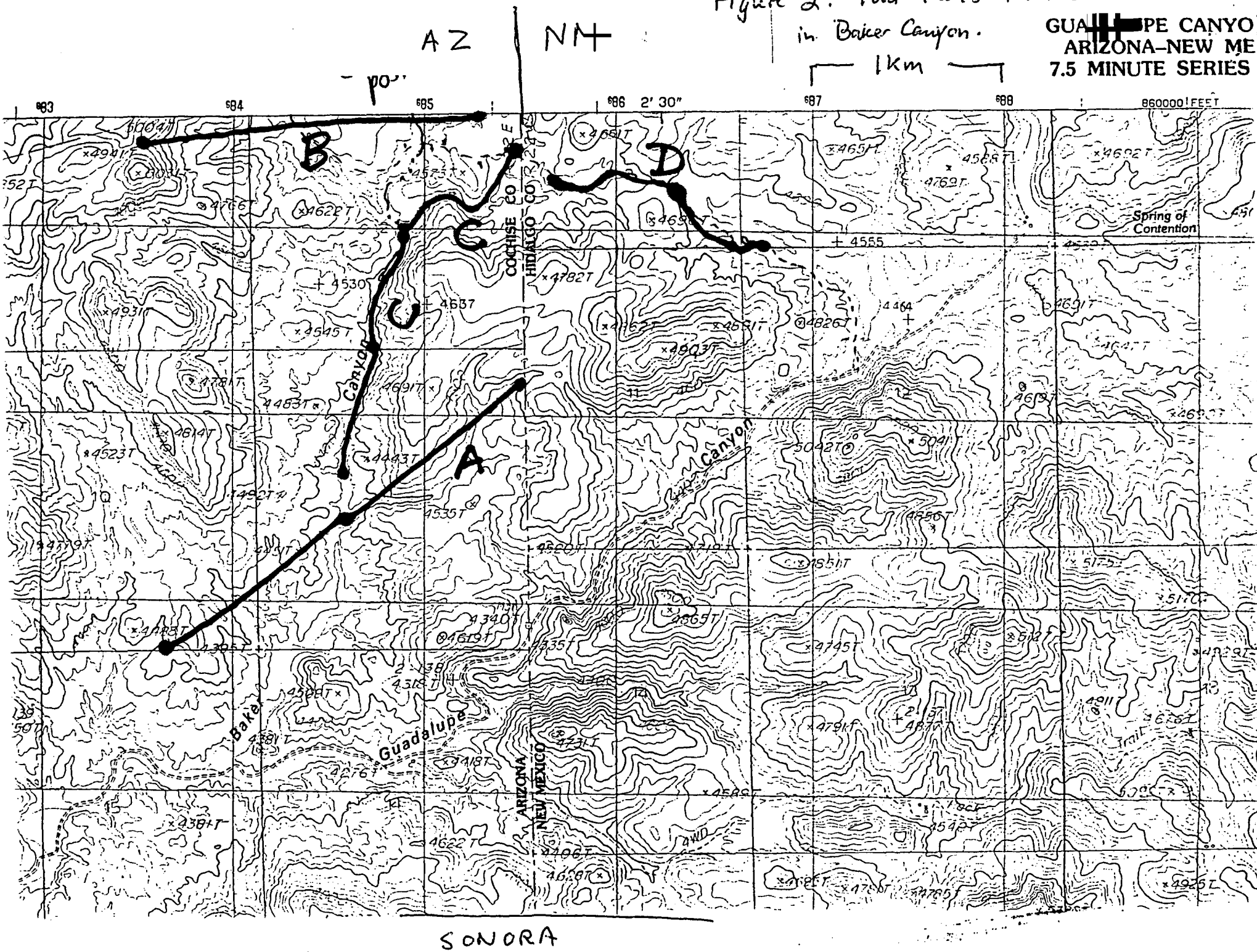
Figure 2. Four transect lines in Baker Canyon.
1km
AZ
NM
GUADALUPE CANYO
ARIZONA–NEW ME
7.5 MINUTE SERIES
2' 30"
B
C
D
A
Spring of Contention
Baker Canyon
Guadalupe
COCHISE CO
HIDALGO CO
ARIZONA
NEW MEXICO
SONORA

Table 1. Identity and abundance of birds on 4 transects in Baker Canyon area, Arizona - New Mexico, based on standard counts (std) and counts using Western Screech-owl tape recording (owl), in late June 1995 prior to a prescribed burn. Number of count points on transect lines: A, 10; B, 7; C, 10; D, 5. Line C was riparian habitat along Baker Creek, whereas A, B, and D included mainly desertscrub and semi-desert grassland.

	Number of individuals			
	Line A	Line B	Line C	Line D
FAMILY & SPECIES	std, owl	std, owl	std, owl	std, owl
Cathartidae - New World Vultures				
Turkey Vulture	1, 1	2, 1	1, 0	
Accipitridae - Kites, Hawks				
Cooper's Hawk	0, 1			
Zone-tailed Hawk	0, 1			
Phasianidae - Turkey, Quail				
Gambel's Quail	8, 4	6, 3	4, 2	11, -
Columbidae - Pigeons, Doves				
Mourning Dove	13, 7	5, 3	3, 4	12, -
White-winged Dove	3, 0	1, 1	5, 0	7, 1
Cuculidae - Cuckoos, Roadrunners				
Greater Roadrunner		0, 1	2, 1	
Caprimulgidae - Nighthawks & Nightjars				
Common Nighthawk	2, 0	0, 1	3, 0	2, 4
Trochilidae - Hummingbirds				
Black-chinned Hummingbird	0, 1	1, 0	0, 1	
Broad-tailed Hummingbird			0, 1	
Picidae - Woodpeckers				
Acorn Woodpecker			0, 1	
Gila Woodpecker			1, 2	
Ladder-backed Woodpecker	2, 1	0, 0	0, 1	1, 0
Tyrannidae - Tyrant Flycatchers				
Dusky-capped Flycatcher	1, 0			
Ash-throated Flycatcher	5, 10	5, 15	11, 17	5, 8
Brown-crested Flycatcher			1, 3	
Corvidae - Jays, Ravens				
Scrub Jay		2, 1	5, 6	3, 3
Chihuahuan Raven	1, 0	1, 1		
Common Raven				1, 0

FAMILY & SPECIES	Line A std, owl	Line B std, owl	Line C std, owl	Line D std, owl	
Paridae - Chickadees, Titmice					
Plain Titmouse			0, 1		
Remizidae - Verdins					
Verdin	2, 3	2, 1	1, 3	1, -	–
Aegithalidae - Bushtits					
Bushtit			0, 12		
Troglodytidae - Wrens					
Cactus Wren	3, 3	3, 2	2, 2	2, 2	–
Rock Wren	1, 1	1, 0	2, 1		–
Canyon Wren			0, 1		
Bewick's Wren	5, 9	4, 7	6, 11	3, 3	–
Muscicapidae - Kinglets, Gnatcatchers, Thrushes					
Black-tailed Gnatcatcher	2, 6	2, 5			
Mimidae - Mockingbirds, Thrashers					
Northern Mockingbird	20, 19	13, 7	23, 8	13, 2	
Crissal Thrasher		2, 1	1, 0		–
Ptilogonatidae - Silky-Flycatchers					
Phainopepla	15, 34	9, 23	20, 98	3, 12	
Vireonidae -Vireos					
Bell's Vireo			0, 1		
Gray Vireo	2, 0				
Emberizidae: Parulinae - Warblers					
Lucy's Warbler			1, 1	0, 3	
Emberizidae: Thraupinae - Tanagers					
Summer Tanager	1, 0		0, 1		
Emberizidae: Cardinalinae - Cardinals, Grosbeaks, Buntings					
Northern Cardinal	2, 3		3, 1		
Blue Grosbeak			2, 0	3, 1	
Varied Bunting		1, 2	3, 1	1, 2	

FAMILY & SPECIES	Line A std, owl	Line B std, owl	Line C std, owl	Line D std, owl
Emberizidae: Emberizinae - Emberizine Finches				
Rufous-sided Towhee		4, 2	0, 2	
Canyon Towhee	4, 1	0, 1	2, 3	2, 0
Rufous-crowned Sparrow	6, 4	6, 3	5, 5	4, 2
Black-throated Sparrow	2, 4	1, 7	1, 2	5, 2
Emberizidae: Icterinae - Icterids				
Brown-headed Cowbird		1, 1	0, 2	
Hooded Oriole			0, 2	
Scott's Oriole			0, 1	
Fringillidae - Finches, Goldfinches				
House Finch	11, 10	11, 10	9, 10	1, 0
Lesser Goldfinch	2, 0			
Total individuals	97, 81	79, 70	94, 89	79, 30
Total species	24, 20	22, 23	25, 33	18, 14
Number of count points	10	7	10	5

Table 2. The ten most common bird species in Baker Canyon in late June 1995, as determined by point counts (standard and with owl tape). Each species occurred on all 4 transects.

	Total on all 4 lines	
Species	Standard count	Owl count
Northern Mockingbird	69	36
Phainopepla	47	167
Mourning Dove	33	14
House Finch	31	31
Gambel's Quail	29	9
Ash-throated Flycatcher	26	50
Rufous-crowned Sparrow	21	14
Bewick's Wren	18	30
White-winged Dove	16	2
Cactus Wren	10	9

Table 3. Vegetation characteristics of two Baker Canyon transects in late June 1995 prior to a prescribed burn: ground cover, litter depth, and woody plant canopy cover. Values are transect means (± 1 standard deviation) for measurements on 0.1 hectare plots centered on count points for birds. Both transects traversed a mixture of desertscrub and semi-desert grassland habitat.

	Line A (n = 10 plots)		Line B (n = 7 plots)	
Variable	Mean	(SD)	Mean	(SD)
% ground cover by:				
Bare ground	14.2	8.3	21.4	13.8
Rock	28.9	14.6	21.8	15.2
Grass	9.4	6.0	11.9	11.9
Forbs	10.0	9.8	6.0	11.4
Leaf-herb litter	21.7	5.9	27.4	15.2
Dead wood < 1 cm diam.	11.9	9.0	7.9	7.0
Dead wood 1-10 cm diam.	3.9	5.7	2.8	3.0
Dead wood > 10 cm diam.	0.0	--	0.8	1.9
Litter depth (mm)	5.9	2.9	5.6	3.8
% canopy cover by woody plants:				
At 0-1 m above ground	33.3	10.4	48.8	13.6
At 1-2 m above ground	16.7	11.0	25.0	10.0
At 2-5 m above ground	3.3	4.6	3.2	5.8

Table 4. Woody plant species on three Baker Canyon transects in late June 1995 prior to a prescribed burn: percentage of 0.1- hectare plots in which species occurred. Plant nomenclature follows Lehr (1978).

Family and Species	% occurrence in 0.1-hectare plots		
	Line A (n=10)	Line B (n=7)	Line C (n=10)
AGAVACEAE			
Agave palmeri	50		10
A. schottii	10		
Dasylirion wheeleri	30	29	20
Nolina sp.		43	50
Yucca baccata	60	57	10
Yucca torreyi		14	10
ANACARDIACEAE			
Rhus choriophylla	10	29	20
Rhus microphylla	70	71	70
BERBERIDACEAE			
Berberis haematocarpa	40	71	100
CACTACEAE			
Opuntia chlorotica	50		
O. imbricata		43	40
O. phaeacantha		30	
O. sp.	40		10
CELASTRACEAE			
Mortonia scabrella	10	57	10
COMPOSITAE			
Artemisia sp.			10
Baccharis glutinosa	10	10	10
Baccharis sp.			60
Ericameria laricifolia	40	14	40
Flourensia cernua		14	
Hymenoclea monogyra			20
Parthenium incanum	40	43	
CORNACEAE			
Garrya wrightii		14	30
CUPRESSACEAE			
Juniperus monosperma	50	71	70

Table 4, continued.

Family and Species	% occurrence in 0.1-hectare plots		
	Line A (n=10)	Line B (n=7)	Line C (n=10)
FABACEAE			
Acacia angustissima	10		
A. constricta	60		30
A. neovernicosa	20	57	20
Calliandra sp.	30		
Dalea sp.		29	
Mimosa biuncifera	40	29	100
Prosopis glandulosa	80	57	80
FAGACEAE			
Quercus emoryi		14	
Q. grisea		14	40
Q. pungens	10	29	
FOUQUIERIACEAE			
Fouquieria splendens	50	14	10
OLEACEAE			
Fraxinus sp.		14	60
PLATANACEAE			
Platanus wrightii		14	20
RHAMNACEAE			
Condalia sp.	50	29	
Ziziphus obtusifolia	10	29	
SALICACEAE			
Populus sp.			10
ULMACEAE			
Celtis pallida	20		
C. reticulata	10		80
VITACEAE			
Vitis arizonica			10
ZYGOPHYLLACEAE			
Larrea tridentata		29	
TOTAL SPECIES	35	29	29

Baker Canyon, AZ-NM, Bird/Vegetation Transect Lines
Established June 1995 by Peter E. Scott.

Compass directions are from a compass adjusted to 13 degrees Easterly, magnetic declination. (This is not the correct declination for Baker! Should be 12 or 13 degrees E. I was "declined" for Santa Rita Mtns. when I did this.)

Distances were paced, using my average pace of 11 paces = 10 meters. Meters are given here. Users should determine what their pace is in meters

LINE A. Cochise Co., AZ. Topo: Guadalupe Canyon 7.5"

General description: From Cochise/Hidalgo Co. state line, approximately 1 mile North of Guadalupe Canyon road, runs from NW to SE (bearing 240 degrees), crossing Baker Canyon in middle (between points 5 and 6).

Number of stations (bird count points): 10.
Distance between stations: 300 meters (+/- 30 m).
Stations marked by:

Rebar in ground with rectangular aluminum numbered tag attached with yellow double-stranded twist-tie. One foot or more of rebar stake is above ground, usually.

Circular metal numbered tag nailed into nearest tree.

Sometimes an extra tag (or yellow twist-tie only) on branch of shrub or tree by station, if any.

Access: To reach station A01, park at cistern on Guad. Canyon road (marked in blue with circle and "WW" on topo) in New Mexico. Walk approx. 100 m (?) up canyon looking for drainage entering from north, indicated in blue on map. Follow this drainage NW, eventually leaving draw and ascending West side. Pay close attention to Topo features. (The state line is not consistently marked with a fence, although some old fence posts seem to mark it. There is a new fence line 100 m or so East of true state line; it runs N-S for a while, jogs NW, then goes N again ...)

Station: A01.

From saddle along state line (approximately), just 30 m N of where Fence from S ends ... [this fence may be 100 m or so E of true stateline as shown on map] ... follow **drainage** SW at 250 degrees + 10, beginning near divide at first ocotillo in lime/white rock. (This drainage shows on topo, outlined by 4600 ft contour, projecting NW into Hidalgo Co.) Follow for 300 m to big JUMO (*Juniperus monosperma*) snag on left. Station is about 30 m back (NE) from this snag in 1.5 m-high PRGL (*Prosopis glandulosa*, mesquite) with turpentine bush (ERLA) and barberry (BEHA) around. (Notes made before fire; this site burned.)
Marked by:

Cairn in wash due N of station.

Rectangular "A01" tag attached to rebar, and another tag to PRGL.

Tag 321 nailed into nearest JUMO, 30 m WSW (256 degrees).
GPS DATA:

From A01 to A02:
Proceed SW on bearing of 240 ...
at 70 m, big JUMO snag (dead tree).
at 205 m, cross little rocky wash running S (*not* shown in blue on topo). *About* where line crosses wash, a wide JUMO (4 m wide, 2.5 m tall) is on W edge of wash, with adjacent 1.5 m PRGL on wash side of JUMO. (Actually, line crosses 15 m downstream at 1.2 m tall prickly pear (Opuntia chlorotica).

Station: A02.
Marked by:
Rebar by JUMO with A02 rect tag.
Nail 322 in this 2 m-tall JUMO.
South of here is little wash originating in our saddle (NW of A01), although not shown in blue on topo.
GPS DATA:

From A02 to A03:
Proceed at 240 bearing ...
at 125 m, cross little 4 m-wide rocky wash from N (blue on topo); this wash joins the other about 20 m downstream. 3-rock cairn by Agave palmeri which is flowering this year ... 3 m-tall live JUMO adjacent in wash 10 m upwash, & a 4 m JUMO mostly snag.
Then 230 m to A03, for total of 355 m.

Station A03.
Marked by:
Rebar and tag A03 beneath JUMO; this JUMO is big half-snag, 4 big twisted trunks; at head of <u>little</u> rocky wash running SE.
Nail 323 on same JUMO.
GPS DATA:

From A03 to A04:
Continue 240 bearing.
Distance is 330 m.

Station A04.
Marked by:
Rebar and A04 tag in low PRGL, half-dead (before burn).
Another A04 tag on PRGL.

Nail 324 in JUMO 25 m distant at 280 degrees (prominent, near top of hill, surrounded (formerly) by *Agave schottii*).
GPS DATA:

From A04 to A05:
Continue 240 bearing (but see note below).
Down steep S-facing slope thru JUMO ... near A05 (at 250 m?) cross wash (now a major one; very grassy, 10 m wide ... the product of little washes followed and crossed from saddle to here). At crossing, an 8-trunk willow stand 10 m tall, with venerable JUMO on S bank, and even more venerable JUMO snag on S slope along 250 degree bearing. Pass this snag on S (upslope) side.

Actually, it is less steep to go due S or SE from A04 into wash, follow it down, looking for willow stand etc., rather than keeping to 240 degree bearing from A04 to wash.
Station A05 is 50-100 m beyond wash crossing (on 240 bearing) in good-sized 4 m-tall JUMO.

Station A05.
Marked by:

Rebar with A05 and yellow wire in ground by JUMO.
Nail 325 in JUMO.

GPS DATA:

From A05 to A06.
240 bearing ...
cross Baker Canyon wash at approx 150 m, continue 150 m.

Station A06.
On slope facing Baker wash, ESE -- one terrace then drop off 50-75 m distance to wash.
Marked by:

Rebar by ACCO (Acacia constricta, Whitethorn), A06 tag.
No nail because no nearby tree.

Vegetation mostly ACCO; prickly pear, barberry, mesquite, Agave palmeri; ocotillo 21 m distant at 340 degrees.
GPS DATA:

From A06 to A07: same bearing, climb ridge; 70 m beyond, sloping downhill W is A07.

Station A07.
Marked by:

Rebar and tag A07 below ACCO.
Tag A07 on ACCO.
Nail 327 in JUMO 22 m distant at 330 degrees.
GPS DATA:

From A07 to A08:
Bearing: 230 degrees.
Aim to right of JUMO on far white hill. __ m to first twisty little "creek" from N, then 50 m to next such creek, then 100 m to A08. (Nice ocotillo stand on hill N of line.)

Station A08. S-facing gradual slope with several dips and swales.
Marked by:
Rebar and A08 tag near mesquite.
Nail 328 on JUMO 10 m N (355 degrees). JUMO is 6 m wide and 5 m tall.
GPS DATA:

From A08 to A09:
Proceed at 230 degrees 100 m to brink of cliff (30 m drop to wash below); Yucca, Littleleaf Sumac on brink. Ahead at 245 degrees beyond other cliff wall is JUMO (40 m or so from others). Head for it, skirting head of canyon to North. Fence line visible here 70 m or so N, and 2 old fence posts closer. Cross fence (crawl under) half-way up next slope (at point where big rock tied to wire).

Station A09. On ridge; in *Quercus pungens/Acacia neovernicosa* cluster with ocotillo 2 m tall and 3 m NE.
Marked by:
Rebar and A09 tag, yellow twist, by QUPU/ACNE ...
Yellow wire (only, no tag) on ACNE.
Nail 329 on unidentified sprawling snag 10 m W (290 degrees) on W edge of ridge.
GPS DATA:

From A09 to A10:
240 bearing.
Dip down 55 m or so, then up over ridge and down other side for 50 m or less.

Station A10.
Marked by:

Rebar and A10 tag by ACNE (Acacia neovernicosa);
yellow twist on ACNE.

Nail 330 in JUMO 20 m distant from station at 140 degrees. This JUMO has 3 big trunks, is locally prominent (only shade around), 3 m tall by 5 m wide.
GPS DATA:

Downslope about 60 m is wash running SW, not on topo, but soon meets major wash draining 3 miles N-S to Guad. Canyon. (This is the next major wash W of Baker.)

Best Access to Guadalupe Canyon Road.

Do not try exiting via the big wash to the west. Instead head SE toward an inviting draw, head an old trail for a while, reach Baker Canyon wash eventually, and follow it out. Then it's "only" a 2+ mile hike up road to vehicle parked at cistern, unless you were able to leave one at the mouth of Baker Canyon.

Baker Canyon, AZ-NM, Bird/Vegetation Transect Lines
Established June 1995 by Peter E. Scott.

Compass directions are from a compass adjusted to 17 degrees Easterly, magnetic declination. (This is not the correct declination for Baker! Should be 12 or 13 degrees E.)

Distances were paced, using my average pace of 11 paces = 10 meters. Meters are given here. Users should determine what their pace is in meters.

LINE B. Cochise Co., AZ. Topo: Guadalupe Canyon 7.5"

General description: Runs along very top edge of Guad. Canyon topo ... [so the Guadalupe Springs Topo is useful to have along for orienting].

Begins (East end) a few hundred m West of Cochise Co., AZ / Hidalgo Co., NM state line. Runs W or slightly S of W, crossing Baker Wash at second station and continuing 5 more stations **to saddle between prominent limestone peaks** (elevations 5031, 5004 on topo). Eye-balling this saddle can be used as way of following "due-West" line, once on it. Final 3 stations (westernmost) are in limestone desertscrub with *Mortonia scabrella* (sandpaperbush) dominating.

Number of stations (bird count points): 7. (Numbered from West to East, B01-B07; we usually begin at East end with B07.)
Distance between stations: 300 meters (+/-).
Stations marked by:

Stations B07-B04: Circular metal numbered tag nailed into nearest tree.

Sometimes an extra rectangular tag inscribed with station # (or yellow twist-tie only) on branch of shrub or tree by station, if any.

Stations B03-B01: Flagging (red and blue) only?, attached to shrub specified in notes.

Access: To reach **Eastern-most station, B07**, park along Guad. Canyon Road in New Mexico, about a mile upcanyon from the cistern (parking spot for A-line access) and a mile downcanyon from Hadley Ranch complex. Two washes enter Guad. Canyon from N, their mouths a few hundred m or less apart. Guad. Canyon here is bounded on S by a prominent double peak, "5042" and "5041". Topo also shows the elevations "4826" on W of the W-most drainage from N, and "4464" on E of E-most drainage from N. The **old road to Baker Spring**, usually impassable by vehicle, follows the W-most drainage ... which drains from the NW. **Walk up this road**, in the wash at first, as it curves NW. In 10 min or so, you leave the wash on the S and W side; pass an old stock tank; and continue winding on, generally NW to the **stateline fence, about a 35- min. walk from Guad. Canyon**. The fence is marked by nice juniper posts in an "H" arrangement on either side of road (but burned?). (There are 5 green stakes on the left side of the road as you walk in. These mark stations on the D transect.)

Before reaching the fence line, you dip down and cross two branches of a major tributary of Baker Wash. Then climb to the fence line (running N-S). Enter Cochise County. Proceed 220 m along road; near end of this you will dip NW and parallel a little creek ravine. Look for a 3-trunked Emory Oak on N bank, 20 m from road. Point B07 is on N side of tree. Leave road and cross the draw to the oak, making your way past beargrass (Nolina), three tall Yuccas, and a mesquite. The road bends due W here and continues to descend.

Station: B07.
On N side of and adjacent to Emory oak mentioned above.
Marked by:
Tag 317 nailed into Emory oak (N side).
GPS DATA: WP6. 0685252 E, 3472598 N, 1381 m ± 20m

From B07 to B06:
Proceed due W (for 300 m). Cross road. In last valley before Baker, little creek crosses transect line heading SSW to intersect with the E-W creek which is about 20 m S of line. Line passes 15 m S of green fence post, at top of the road's descent NW into Baker Canyon.

Station: B06. On E slope of Baker Wash, just S of reddish rock outcrop, among cluster of catclaw mimosa (*Mimosa biuncifera*, MIBI).
Marked by:
rectangular alum. tag "B06" (reverse side: 316), attached with yellow 2-strand wire to MIBI, which is 1.5 m tall. (3 m N of this MIBI is prominent E-W running line of red rock. To E, higher on slope, about 10-15 m, is a biggish juniper. From MIBI to sycamore on W side of wash, bearing is 250 degrees. An Ash is 20 m upstream from sycamore, also on W side.)
GPS DATA: (WP7) 0684984 E, 3472576 N, 1362 ± 20 m

From B06 to B05:
Continue due W, 270 deg. (or 5 deg. S of W.) for ~~300~~ 315 m.
Cross wash in 15 m ...

Station B05. In low (1.8 m) mesquite in fairly open area sloping gradually NE. Reddish rocks to South. Pretty big Juniper (4 m tall and wide) 5 m N of station.
Marked by:
Rectangular tag B05/315, attached with yellow twist to MESQUITE.
Nail 315 on Juniper just N.
(Just 3 m SE (120 deg) of mesquite is a 2-m wide red rock cluster with prickly pear in middle.)
GPS DATA:
(WP8) 0684672 E, 3472548 N, 1391 ± 20 m

From B05 to B04:
Continue W (270) for 300 m.

Station B04. In 2-m tall Littleleaf Sumac just 5 m W of little wash that runs NW-SE. (There is a much bigger, denser Sumac 10 m NW on same side of wash.) Short slope, rather steep, to W of point, temporarily blocks view of mountain saddle to West.
Marked by:
Rectangular tag B04/314, attached with yellow twist to RHMI (little leaf sumac, *Rhus microphylla*).
Nail 314 on Juniper 10 m S.
GPS DATA: WP — 0684378 E, 3472513 N, 1383 ± 20 m

From B04 to B03:
Continue west (270) through much Viscid thorny Acacia and Mortonia, head-high shrubs. Watch for Black-tailed Rattlesnake (June 95) and bear (June 96)! 300 m distance, +- 15 m.

Station B03. In Mortonia, with 3 m-tall Juniper 10 m distant at 140 degrees; another Juniper at 320 deg and 25 m; an evergreen sumac at 340 deg and 8 m distant; several (6-7) Junipers to E, and only 1-2 to W. A more-or-less flat area near base of long E slope of peak "5031".
The point of the limestone ridge is WNW at 300 deg. The wash is 20 m south.
Marked by:
Flagging only? Nail 313
GPS DATA: 0684127 E, 3472493 N, 1400 ± 20 m

From B03 to B02.
Continue W 300 m, aim for saddle between peaks "5031" and "5004".

Station B02.
On Mortonia shrub, which is 6 m E of lonely 2 m-tall Evergreen Sumac (nice ocotillo stand around point). Limestone, E-W ridge comes to a point at 60 degrees (NE) from station. Main wash draining peak 5031 to E is South of B02.
Marked by:
Flagging only (red and blue)? yellow twist + #156 tag on Mortonia
GPS DATA: WP11. 0683914 E, 3472467 N, 1426 ± 20 m

From B02 to B01: head W 300 m to the saddle between 2 peaks.

Station B01. Exactly in the saddle, lowest point (of the highest line) between the 2 peaks. In Mortonia shrub.

Marked by: yellow tint + #157 tag added today

Flagging only? (red and blue).

GPS DATA: WP 12. 0683511 E, 3472404 N, 1428 ± 20 m

Return following the transect line to Baker Canyon road. When returning, the airfield north of Guad. Canyon Ranch is a convenient landmark when visible, approximately due E. (Or can head north from near station B03, and hit another road that leads back E to Baker Canyon road; this route offers the respite of shade, in an oak grove. You can also see this road from the saddle, B01, and could make your way north to it.)

Baker Canyon, AZ-NM, Bird/Vegetation Transect Lines
Established June 1995 by Peter E. Scott.

Compass directions are from a compass adjusted to 13 degrees Easterly, magnetic declination. (This is not the correct declination for Baker! Should be 12 or 13 degrees E.)

Distances were paced, using my average pace of 11 paces = 10 meters. Meters are given here. Users should determine what their pace is in meters

LINE C. Cochise Co., AZ. Topo: Guadalupe Canyon 7.5"

General description: A riparian transect beginning in an eastern tributary (4 stations), following it SW to Baker Canyon wash, then following Baker Canyon downwash (6 stations) and S to just above where transect line A crosses Baker.

Number of stations (bird count points): 10.
Distance between stations: 300 meters (+/- 30 m), *following all twists and turns of creek* (unlike other transects, which are straight lines). Thus, no fixed bearing for this transect.
Stations marked by:
Circular stamped medallion (#'s 301-310) nailed into tree.

Access: To reach station C01, follow directions to beginning of B line. Park on Guad. Canyon road in New Mexico and *follow old road to Baker Spring* northwest for about 1.5 miles. At stateline fence (35-40 minute hike), leave road and follow fence south on Arizona side (West) of fence across creek and downwash. Point C01 is **115 m downwash from where fence crosses creek.** (Where fence crosses creek is below the confluence of 2 branches of this tributary.)

Station: C01. In Juniper on right (W) side of wash; this JUMO relatively small, about 5 trunks; 5 m upstream same side is larger JUMO with 2-3 times the crown diameter of marked tree. -- Jutting into wash between these JUMO's is big brown boulder 2 m diameter. -- On opposite side of wash is JUMO, Nolina, Littleleaf Sumac. -- Wash here is in a "canyon" with fairly steep slopes 15 m high.
Marked by:
Tag 301 nailed into Juniper. ~ gone– this JUMO fried – new blue flag
GPS DATA: WP22 0685 398 E, 3472323 N, 1378 ± 20 m

From C01 to C02: 300 m downstream.

Station: C02. Wash direction 210 degrees. Wash only 1-3 m wide here; *open* on right, W; gentle slope on E. Station point is *in small Juniper right edge wash*; but NAIL 302 is in Gray Oak on left E slope, 10 m from juniper and down wash. (This tree more likely to survive floods.)

GPS DATA: WP21. 0685315 E, 3472091 N, 1368 ± 20 m

From C02 to C03:
50 m downstream wash bends WEST (shown on topo) ...
a) and little rocky ravine enters from S (not on topo)
b) also, before big bend W, a little creek enters on left.

Station C03. Wash heading SW, 230 deg. Flags in Barberry, Right side (West); station is here. **Nail 303** in Gray Oak 15 m downwash, left (S) side. not found, new blue flag + yellow twist
GPS DATA: WP20. 0685122 E, 3472176 N, 1352 ± 20 m

From C03 to C04: 300 m.

Station C04. Still in tributary. Wash direction 240 (SW). NAIL 304 in big Juniper right side, part of a "grove" of Juniper and Gray Oak; steep red rock on left. Ahead 30 m or so on left, prominent rock spire, 10 m tall, yellow lichen on red rock.
GPS DATA: WP19. 0684983 E, 3472024 N, 1351 ± 20 m

From C04 to C05:
130 m from C04, the tributary which transect has followed empties W into Baker Wash, which is heading south and is quite wide (16 m). Proceed 170 m down Baker to ...

Station C05. In Netleaf Hackberry on Left (E) side of wash, 5 m out of wash on slope. Wash heads S (210 deg); 2 big ashes 30 m downwash. Big rocky slope on E, 50 m high, some Gray Oak/Juniper patches; mostly shrubby on West, 10 m slope, grass/rocks/shrubs.
Marked by: Nail 305 in Hackberry.
GPS DATA: WP17 0684872 E, 3471851 N, 1340 m

From C05 to C06.
210 m downwash, a side wash enters from right (W) (shows on topo; hill 4530 nearby, SW). C06 is 90 m below this wash.

Station C06. In small ash tree, right side wash; 15 m downwash from much bigger ash growing in middle of wash. Wash direction 170, S. 30 m Upwash, 2 big red boulders E side.
Marked by:
Nail 306 in small Ash.
GPS DATA: WP16 0684752 E, 3471633 N, 1330 ± 20 m

From C06 to C07: 220 m below C06, wash enters from Right (W) -- big gray rocks -- shows on topo. Continue 80 m. Also, several pools in rock and sand, one 4 m x 1 m.

Station C07. In big (0.5 m dbh) single-trunked Ash right side (W) -- Wash heads 170 deg (S). Station is 10 m past multi-trunked bigger Ash ... 25 m past (down from) more-or-less flat, rocky area W side wash. First big Sycamore stand (18 trunks) of transect is on opposite side of wash from station (E).
Marked by:
Nail 307 in big Ash. (Mortonia grows next to ash.)
GPS DATA: WP15. 0684744 E, 3471377 N, 1330 m

From C07 to C08: 300 m on.

Station C08. Nail 308 in small Cottonwood on W side wash.
Rather open, wash-zone only 7 m wide. but 5 m long stagnant pool. Very grassy. Limestone hills visible to W. Fairly steep, 50 m tall slope on E side, shrubby with mesquite, juniper, Nolina.
Marked by:
Nail 308 in small cottonwood.
GPS DATA: WP14. 0684688 E, 3471145 N, 1325 ± 20 m

From C08 to C09:
25 m downwash from C08, wash from W enters ... Erythrina, Agave Palmeri, Mortonia, & big red-yellow swirls in white rock of streambed. (More stagnant pools.) 310 m total to C09.

Station C09. Flag (or twist and tag) in small ASH right side (W). Nail 309 in big ASH left side 10 m further.
-- Vicinity: Open and gradually sloping to 30 m height on right (W). Shrubby with Juniper trees and red rock outcrop.
Marked by:
Nail 309 in big Ash left side.
GPS DATA: WP13. 0684609 E, 3470896 N, 1320 m ± 20

From C09 to C10: 300 m. Pass wash entering on Rt (from W).
Station C10. Low rock cliff on right edge; big Netleaf Hackberry on left out of wash. Left side: rather open and rolling, no more high slope

Marked by: Nail 310 in big Hackberry left side out of wash. (Cottonwood snag is 35 m upwash from here; 15 m tal, with base half-resprouted. Live sycamore 40 m downwash, left side.
GPS DATA:

Best Access to Guadalupe Canyon Road.

Follow Baker Canyon wash south. 230 m from C10, the A-line crosses (and side wash enters from E).

Baker Canyon, AZ-NM, Bird/Vegetation Transect Lines
Established June 1995 by Peter E. Scott.

Distances were paced, using my average pace of 11 paces = 10 meters. Meters are given here. Users should determine what their pace is in meters

LINE D. Hidalgo Co., NM. Topo: Guadalupe Canyon 7.5"

General description: Transect follows old road from Guadalupe Canyon to Baker Spring, through area that has probably seen more grazing than rest of study area (old corrals, stock ponds). Much mesquite and juniper. Stations are marked by tall green metal stakes (3-4 ft. high) on left side of road as you hike in from Guad. Canyon. Distances between these are variable, 275 m to 480 m or so. First stake is a 10 minute walk from Guad. Canyon; the fifth (last) is before reaching the state line fence. There is some association between these stakes and the Photo Points used by Pete Sundt and Ray Turner to photograph area before the 1995 prescribed burn.

Number of stations (bird count points): 5.
Distance between stations: Variable, 275 to 480 m, *following all twists and turns of the road* (unlike transects A and B, which are straight lines). Thus, no fixed bearing for this transect.
Stations marked by:
Green metal stakes on left side of road, 3-4 ft. high. No numbered tags.

Access: To reach station D01, follow beginning of directions to B line. Park on Guad. Canyon road in New Mexico and *follow old road to Baker Spring* northwest. First stake is about 10 minutes walk in **(850 m)**, *before* you reach the old cattle tank shown on map.

Station: D01. Stake on left side of road. Road no longer in wash at this point. **Percent burned in 1995: 100%** of 0.1-hectare circle around stake. Slope position: low, base of local valley. Slope aspect: facing 91 (wash flows east).
GPS DATA: WP1. 0686911 E, 3471844 N, 1372 m

From D01 to D02: Distance? Pass old stock tank on right soon after D01.

Station D02. Stake on left side of road. Slope position: Middle of slope (between top of local slope and bottom). Slope angle: 5 degrees. Slope aspect (direction facing): 74 degrees. **Percent burned: 20%** of 0.1-hectare circle (36 m diameter) around stake. Hill south of plot burned fairly well: Junipers, Yuccas killed.
GPS DATA: WP2. 0686440 E, 3471990 N, 1400 m

From D02 to D03: 480 m?
Station D03. Stake on left side of road. Slope position: middle. Slope angle: 10 degrees. Slope aspect: 50 degrees. **Percent burned: 75%** of 0.1-hectare circle around stake.
GPS DATA: WP3. 0686242 E, 3472232 N, 1403 m ± 20 m

From D03 to D04: 275 m? 480 m?
Station D04. Stake on left side of road. Slope position: 2. Slope angle: 10 degrees. Slope aspect: 175 degrees. **Percent burned:** __% of 0.1-hectare circle around stake. ("Patchy burn, moderate. <5 JUMO burned, >20 live; mesquite, 5-10 burned, 10 live; Nolina & Yucca burned, resprouting.")
GPS DATA: WP4. 0685904 E, 3472401 N, 1395 ± 20 m

From D04 to D05: 275 m?

Station D05. Stake on left side of road. Haven't reached stateline fence yet. Slope position: 2. Slope angle: 10 degrees. Slope aspect: 295 degrees. **Percent burned:** 0% of 0.1-hectare circle around stake. ("burn more complete than Station 5, about 60%, but not as hot"). but just outside circle to S, much burn
GPS DATA:

WP5. 0685648 E, 3472403 N, 1387 ± 20 m

Table 1. Bird counts in Baker Canyon, AZ-NM. Each column gives totals for 4 transects (32 points), counted once during the period. The first number is birds detected on Standard Counts (without tape); the number after the semi-colon is additional birds detected on Owl Counts, when a Western Screech-owl tape was played.

		SUMMER		WINTER	
Family	**Species**	**June 1995**	**June 1996**	**Dec 1996**	**Feb 1997**
Ardeidae	Great Blue Heron		1; 0		
Cathartidae	Turkey Vulture	4; 2	8; 3		
Accipitridae	American Kestrel		1; 0		
	falcon, *unidentified*				1; 0
	Cooper's Hawk	0; 1			
	Red-tailed Hawk		1,0		
	Zone-tailed Hawk	0; 1			
Strigidae	Western Screech-Owl		0; 3	0; 1	0; 1
Phasianidae	Gambel's Quail	29; 9	78; 11	15; 10	2; 0
Columbidae	Mourning Dove	33; 14	34; 3	1; 0	1; 0
	White-winged Dove	16; 2	33; 5		
	Common Ground-Dove		1; 0		
Cuculidae	Greater Roadrunner	2; 2	4; 2		1; 2
Caprimulgidae	Common Nighthawk	7; 5	17; 11		
	Poor-will		2; 0		
Apodidae	White-throated Swift		6; 1		
Trochilidae	Black-chinned Hummingbird	1; 2	1; 4		
	Broad-tailed Hummingbird	0; 1	3; 0		
	Broad-billed Hummingbird		0; 4		
	hummingbird, *unidentified*		3; 0		
Picidae	Acorn Woodpecker	0; 1			
	Gila Woodpecker	1; 2	5; 4	1; 2	1; 1
	Red-naped Sapsucker			0; 3	0; 1
	Ladder-backed Woodpecker	3; 2	1; 1		2; 1
	Northern Flicker			1; 4	0; 5
	woodpecker, *unidentified*		0; 1		0; 1
Tyrannidae	Cassin's Kingbird		0; 2		
	Black Phoebe		1; 0		
	Say's Phoebe				0; 1
	Dusky-capped Flycatcher	1; 0	2; 4		
	Ash-throated Flycatcher	26; 50	35; 16		
	Brown-crested Flycatcher	1; 3	5; 0		
	Gray Flycatcher				1; 0
	Western Wood-Pewee		1; 0		
Corvidae	Scrub Jay	10; 10	8; 6	5; 4	14; 9
	Chihuahuan Raven	2; 1			3; 0
	Common Raven	1; 0	5; 2	2; 0	1; 0
	raven, *unidentified*				1; 0

		SUMMER		WINTER	
Family	**Species**	**June 1995**	**June 1996**	**Dec 1996**	**Feb 1997**
Remizidae	Verdin	6; 7	18; 9	2; 5	1; 6
Aegithalidae	Bushtit	0; 12	5; 0	0; 8	0; 8
Troglodytidae	Cactus Wren	10; 9	16; 8	3; 1	5; 1
	Rock Wren	4; 2	8; 4	1; 3	1; 2
	Canyon Wren	0; 1	3; 2	1; 1	
	Bewick's Wren	18; 30	38; 29	1; 20	10; 7
	House Wren			0; 1	0; 1
Muscicapidae	Ruby-crowned Kinglet			2; 11	5; 4
	Black-tailed Gnatcatcher	4; 11	9; 10	1; 3	1; 0
	Western Bluebird				4; 0
	bluebird, *unidentified*			4; 0	
	Townsend's Solitaire				1; 1
	Hermit Thrush			1; 5	1; 2
Mimidae	Northern Mockingbird	69; 36	42; 8	0; 2	1; 1
	Sage Thrasher				0; 1
	Curve-billed Thrasher		1; 1		
	Crissal Thrasher	3; 1	2; 0	3; 6	8; 6
Ptiligonatidae	Phainopepla	47; 167	1; 0	7; 18	3; 1
Vireonidae	Bell's Vireo	0; 1	8; 1		
	Gray Vireo	2; 0	2; 5		
	Hutton's Vireo				1; 1
Parulinae	Lucy's Warbler	1; 4	1; 2		
	Yellow Warbler		0; 1		
Thraupinae	Summer Tanager	1; 1			
Cardinalinae	Northern Cardinal	5; 4	11; 11	0; 1	0; 1
	Black-headed Grosbeak		0; 2		
	Blue Grosbeak	5; 1	14; 8		
	Varied Bunting	5; 5	2; 4		
Emberizinae	Spotted (Rufous-s.) Towhee	4; 4	1; 1	3; 5	2; 6
	Canyon (Brown) Towhee	8; 5	29; 9	6; 14	6; 7
	Rufous-crowned Sparrow	21; 14	36; 14	2; 6	9; 7
	Chipping Sparrow			24; 234	113; 219
	Brewer's Sparrow			0; 8	0; 1
	Black-chinned Sparrow			0; 1	2; 6
	Vesper Sparrow				1; 0
	Black-throated Sparrow	9; 15	18; 12	6; 11	0; 3
	Lincoln's Sparrow			1; 2	2; 1
	White-crowned Sparrow			23; 50	2; 24
	Dark-eyed Junco			42; 405	50; 55
	sparrow, *unidentified*			0; 37	6; 34
Icterinae	Brown-headed Cowbird	1; 3	14; 6		
	Hooded Oriole	0; 2			
	Scott's Oriole	0; 1	2; 3		

		SUMMER		WINTER	
Family	**Species**	**June 1995**	**June 1996**	**Dec 1996**	**Feb 1997**
Fringillidae	Cassin's Finch			0; 2	
	House Finch	32; 30	21; 11	5; 15	10; 16
	Lesser Goldfinch	2; 0	5; 1		
	Total Individuals	349; 270	562; 243		
	Total Species	46	55	36	44
	Count Points	32	32	32	32

Table 1. Species of woody plants and cacti, and number of individual plants, which burned on eleven 0.1-hectare plots in Baker Canyon area, AZ-NM, June 1995. Data were recorded in June 1996.

		Plot											
Species	**Common Name**	B4.0	B4.1	B5.0	B5.1	B6.0	D1.0	D1.1	D2.0	D2.1	D3.0	D3.1	**Total**
Acacia constricta	Whitethorn Acacia		4					1					5
Acacia neovernicosa	Viscid Acacia	8											8
Agave palmeri	Palmer Agave	1											1
Aloysia wrightii	Oreganillo							4					4
Anisacanthus thurberi	Desert Honeysuckle							1					1
Baccharis salicifolia	Willow-leaf. Baccharis					3							3
Berberis haematocarpa	Red Barberry	4	1	2		15	2	5					29
Celtis reticulata	Netleaf Hackberry						1						1
Celtis pallida	Desert Hackberry	2											2
Condalia sp.	Condalia	5											5
Ericameria laricifolia	Turpentine bush			2	1								3
Gutierrezia sarothrae	Matchbrush				1			3	2	1	7		14
Juniperus monosperma	**One-seed Juniper**		**1**			**1**	**8**	**13**	**1**		**1**		**25**
Mimosa biuncifera	Catclaw Mimosa	5		3		119	5	3					135
Mortonia scabrella	Sandpaper bush	3											3
Nolina microcarpa	Beargrass	8		1		17							26
Opuntia violacea	Purple Prickly Pear									1			1
Opuntia phaeacantha	Purple-fruit Prickly Pear		27	27	19		1				2		76
Opuntia spinosior	Cane Cholla		6	11	14		2	2			6	11	52
Prosopis glandulosa	**Honey Mesquite**	**6**	**8**	**40**	**49**	**11**	**74**	**47**	**13**	**6**	**55**	**51**	**360**
Rhus choriophylla	Evergreen Sumac					1							1
Rhus microphylla	Littleleaf Sumac	3	2	10	3	5	16	24	1		2		67
Yucca sp.	Yucca	3	1	1								1	6
Ziziphus obtusifolia	Graythorn			10	17	1	4	4		7	8	20	71
--	Unknown shrub	1	1			1		4			1		8
	TOTAL	**49**	**51**	**107**	**104**	**174**	**113**	**111**	**17**	**15**	**82**	**83**	**906**

Table 2. Survival of woody plants and cacti which burned on eleven 0.1-hectare plots in Baker Canyon area, AZ-NM, June 1995. Data were recorded in June 1996.

		Survival Category				
Species	**Common Name**	Killed	Resprout-ing at base (killed above ground)	5-49% above-ground survival	50-95% above-ground survival	Total Burned
Acacia constricta	Whitethorn Acacia	1	4			5
Acacia neovernicosa	Viscid Acacia	4	4			8
Agave palmeri	Palmer Agave	1				1
Aloysia wrightii	Oreganillo		4			4
Anisacanthus thurberi	Desert Honeysuckle		1			1
Baccharis salicifolia	Willow-leaf. Baccharis	2	1			3
Berberis haematocarpa	Red Barberry	1	28			29
Celtis reticulata	Netleaf Hackberry		1			1
Celtis pallida	Desert Hackberry		2			2
Condalia sp.	Condalia		5			5
Ericameria laricifolia	Turpentine bush	3				
Gutierrezia sarothrae	Matchbrush	14				
Juniperus monosperma	**One-seed Juniper**	**20**	**1**		**4**	**25**
Mimosa biuncifera	Catclaw Mimosa	8	127			135
Mortonia scabrella	Sandpaper bush		3			3
Nolina microcarpa	Beargrass	1	25			26
Opuntia violacea	Purple Prickly Pear	1				1
Opuntia phaeacantha	Purple-fruit Prickly Pear	17	1	27	31	76
Opuntia spinosior	Cane Cholla	29	12	4	7	52
Prosopis glandulosa	**Honey Mesquite**	**61**	**254**	**15**	**30**	**360**
Rhus choriophylla	Evergreen Sumac		1			1
Rhus microphylla	Littleleaf Sumac	20	45		2	67
Yucca sp.	Yucca	1	5			6
Ziziphus obtusifolia	Graythorn	5	65		1	71
--	Unknown shrub	7				7
	TOTAL	**178**	**590**	**49**	**74**	**906**
	PERCENT	***19.6***	***65.1***	***5.4***	***8.2***	***100.0***

Table 3. Pre-burn (23-25 June 1995) and post-burn (15-18 June 1996) abundances of birds on 4 transect lines in Baker Canyon area, Arizona - New Mexico, based on two types of counts: standard (std) and owl (using Western Screech-owl tape recording). See text for discussion of numbers on "owl counts"; in 1996, this was restricted to the number of new individuals added, i.e. not recorded during the preceding "standard count". Line C was riparian habitat along Baker Creek, whereas A, B, and D traversed mainly desertscrub and semi-desert grassland.

	Number of individuals			
	Line A	Line B	Line C	Line D
FAMILY & SPECIES	**std, owl**	**std, owl**	**std, owl**	**std, owl**
Ardeidae - Herons				
Great Blue Heron 1995	-	-	-	-
Great Blue Heron 1996	-	-	1, 0	-
Cathartidae - New World Vultures				
Turkey Vulture 1995	1, 1	2, 1	1, 0	-
Turkey Vulture 1996	3, 0	3, 1	2, 2	-
Accipitridae - Kites, Hawks				
American Kestrel 1995	-	-	-	-
American Kestrel 1996	-	-	1, 0	-
Cooper's Hawk 1995	0, 1	-	-	-
Cooper's Hawk 1996	-	-	-	-
Red-tailed Hawk 1995	-	-	-	-
Red-tailed Hawk 1996	-	1, 0	-	-
Zone-tailed Hawk 1995	0, 1	-	-	-
Zone-tailed Hawk 1995	-	-	-	-
Strigidae - Owls				
Western Screech-Owl 1995	-	-	-	-
Western Screech-Owl 1996	-	-	0, 2	0, 1
Phasianidae - Turkey, Quail				
Gambel's Quail 1995	8, 4	6, 3	4, 2	11, -
Gambel's Quail 1996	22, 4	11, 1	25, 1	20, 5

FAMILY & SPECIES	Line A std, owl	Line B std, owl	Line C std, owl	Line D std, owl
Columbidae - Pigeons, Doves				
Mourning Dove 1995	13, 7	5, 3	3, 4	12, -
Mourning Dove 1996	9, 1	10, 0	6, 2	9, 0
White-winged Dove 1995	3, 0	1, 1	5, 0	7, 1
White-winged Dove 1996	10, 0	8, 0	8, 4	7, 1
Common Ground-Dove 1995	-	-	-	-
Common Ground-Dove 1996	-	1, 0	-	-
Cuculidae - Cuckoos, Roadrunners				
Greater Roadrunner 1995	-	0, 1	2, 1	-
Greater Roadrunner 1996	0, 1	3, 1	1, 0	-
Caprimulgidae - Nighthawks & Nightjars				
Common Nighthawk 1995	2, 0	0, 1	3, 0	2, 4
Common Nighthawk 1996	5, 3	2, 1	4, 1	6, 6
Poor-will 1995	-	-	-	-
Poor-will 1996	-	-	2, 0	-
Apodidae - Swifts				
White-throated Swift 1995	-	-	-	-
White-throated Swift 1996	3, 1	1, 0	2, 0	-
Trochilidae - Hummingbirds				
Black-chinned Hummingbird '95	0, 1	1, 0	0, 1	-
Black-chinned Hummingbird '96	0, 1	1, 0	0, 1	0, 2
Broad-tailed Hummingbird 1995	-	-	0, 1	-
Broad-tailed Hummingbird 1996	2, 0	-	-	1, 0
Broad-billed Hummingbird 1995	-	-	-	-
Broad-billed Hummingbird 1996	0, 1	-	0, 3	-
unidentified hummingbird 1995	-	-	-	-
unidentified hummingbird 1996	1, 0	-	2, 0	-

FAMILY & SPECIES	Line A std, owl	Line B std, owl	Line C std, owl	Line D std, owl
Picidae - Woodpeckers				
Acorn Woodpecker 1995	-	-	0, 1	-
Acorn Woodpecker 1996	-	-	-	-
Gila Woodpecker 1995	-	-	1, 2	-
Gila Woodpecker 1996	1, 1	1, 1	2, 1	1, 0
Ladder-backed W'pecker 1995	2, 1	-	0, 1	1, 0
Ladder-backed W'pecker 1996	-	0, 1	-	1, 0
unidentified woodpecker 1995	-	-	-	-
unidentified woodpecker 1996	-	-	0, 1	-
Tyrannidae - Tyrant Flycatchers				
Cassin's Kingbird 1995	-	-	-	-
Cassin's Kingbird 1996	-	-	-	0, 2
Black Phoebe 1995	-	-	-	-
Black Phoebe 1996	-	-	1, 0	-
Dusky-capped Flycatcher 1995	1, 0	-	-	-
Dusky-capped Flycatcher 1996	0, 2	-	2, 2	-
Ash-throated Flycatcher 1995	5, 10	5, 15	11, 17	5, 8
Ash-throated Flycatcher 1996	11, 3	7, 2	10, 5	7, 6
Brown-crested Flycatcher 1995	-	-	1, 3	-
Brown-crested Flycatcher 1996	-	-	5, 0	-
Western Wood-Pewee 1995	-	-	-	-
Western Wood-Pewee 1996	-	-	-	1, 0
Corvidae - Jays, Ravens				
Scrub Jay 1995	-	2, 1	5, 6	3, 3
Scrub Jay 1996	1, 2	2, 0	1, 1	4, 3
Chihuahuan Raven 1995	1, 0	1, 1	-	-
Chihuahuan Raven 1996	-	-	-	-

FAMILY & SPECIES	Line A std, owl	Line B std, owl	Line C std, owl	Line D std, owl
Common Raven 1995	-	-	-	1, 0
Common Raven 1996	-	1, 0	2, 0	2, 2
Paridae - Chickadees, Titmice				
Plain Titmouse 1995	-	-	0, 1	-
Plain Titmouse 1996	-	-	-	-
Remizidae - Verdins				
Verdin 1995	2, 3	2, 1	1, 3	1, -
Verdin 1996	7, 0	2, 3	3, 2	6, 4
Aegithalidae - Bushtits				
Bushtit 1995	-	-	0, 12	-
Bushtit 1996	5, 0	-	-	-
Troglodytidae - Wrens				
Cactus Wren 1995	3, 3	3, 2	2, 2	2, 2
Cactus Wren 1996	6, 2	5, 4	1, 0	4, 2
Rock Wren 1995	1, 1	1, 0	2, 1	-
Rock Wren 1996	3, 4	1, 0	3, 0	-
Canyon Wren 1995	-	-	0, 1	-
Canyon Wren 1996	1, 0	-	2, 2	-
Bewick's Wren 1995	5, 9	4, 7	6, 11	3, 3
Bewick's Wren 1996	12, 4	6, 4	12, 11	8, 10
Muscicapidae - Kinglets, Gnatcatchers, Thrushes				
Black-tailed Gnatcatcher 1995	2, 6	2, 5	-	-
Black-tailed Gnatcatcher 1996	7, 4	0, 5	2, 0	0, 1
Mimidae - Mockingbirds, Thrashers				
Northern Mockingbird 1995	20, 19	13, 7	23, 8	13, 2
Northern Mockingbird 1996	18, 0	8, 1	9, 1	7, 6
Curve-billed Thrasher 1995	-	-	-	-
Curve-billed Thrasher 1996	-	-	-	1, 1

FAMILY & SPECIES	Line A std, owl	Line B std, owl	Line C std, owl	Line D std, owl
Crissal Thrasher 1995	-	2, 1	1, 0	-
Crissal Thrasher 1996	1, 0	1, 0	-	-
Ptilogonatidae - Silky-Flycatchers				
Phainopepla 1995	15, 34	9, 23	20, 98	3, 12
Phainopepla 1996	-	1, 0	-	-
Vireonidae -Vireos				
Bell's Vireo 1995	-	-	0, 1	-
Bell's Vireo 1996	2, 0	-	5, 1	1, 0
Gray Vireo 1995	2, 0	-	-	-
Gray Vireo 1996	1, 2	0, 3	1, 0	-
Emberizidae: Parulinae - Warblers				
Lucy's Warbler 1995	-	-	1, 1	0, 3
Lucy's Warbler 1996	-	-	1, 1	0, 1
Yellow Warbler 1995	-	-	-	-
Yellow Warbler 1996	-	-	0, 1	-
Emberizidae: Thraupinae - Tanagers				
Summer Tanager 1995	1, 0	-	0, 1	-
Summer Tanager 1996	-	-	-	-
Emberizidae: Cardinalinae - Cardinals, Grosbeaks, Buntings				
Northern Cardinal 1995	2, 3	-	3, 1	-
Northern Cardinal 1996	3, 2	1, 2	6, 6	1, 1
Black-headed Grosbeak 1995	-	-	-	-
Black-headed Grosbeak 1996	-	0, 1	0, 1	-
Blue Grosbeak 1995	-	-	2, 0	3, 1
Blue Grosbeak 1996	4, 3	5, 1	3, 1	2, 3
Varied Bunting 1995	-	1, 2	3, 1	1, 2
Varied Bunting 1996	1, 2	0, 1	1, 1	-

FAMILY & SPECIES	Line A std, owl	Line B std, owl	Line C std, owl	Line D std, owl
Emberizidae: Emberizinae - Emberizine Finches				
Spotted (Rufous-s.) Towhee 1995	-	4, 2	0, 2	-
Spotted (Rufous-s.) Towhee 1996	-	1, 1	-	-
Canyon (Brown) Towhee 1995	4, 1	0, 1	2, 3	2, 0
Canyon (Brown) Towhee 1996	8, 0	9, 0	6, 1	6, 8
Rufous-crowned Sparrow 1995	6, 4	6, 3	5, 5	4, 2
Rufous-crowned Sparrow 1996	10, 3	8, 2	10, 6	8, 3
Black-throated Sparrow 1995	2, 4	1, 7	1, 2	5, 2
Black-throated Sparrow 1996	6, 4	6, 4	1, 0	5, 4
Emberizidae: Icterinae - Icterids				
Brown-headed Cowbird 1995	-	1, 1	0, 2	-
Brown-headed Cowbird 1996	7, 2	4, 1	2, 1	1, 2
Hooded Oriole 1995	-	-	0, 2	-
Hooded Oriole 1996	-	-	-	-
Scott's Oriole 1995	-	-	0, 1	-
Scott's Oriole 1996	0, 1	-	-	2, 2
Fringillidae - Finches, Goldfinches				
House Finch 1995	11, 10	11, 10	9, 10	1, 0
House Finch 1996	8, 2	5, 0	6, 5	2, 4
Lesser Goldfinch 1995	2, 0	-	-	-
Lesser Goldfinch 1996	1, 1	-	-	4, 0
Total individuals 1995	97, 81	79, 70	94, 89	79, 30
Total individuals 1996	179, 55	115, 41	151, 67	117, 80
Total species 1995	27	25	38	20
Total species 1996	35	34	42	30
Number of count points	10	7	10	5

Table 4. Pre-burn (23-25 June 1995) and post-burn (15-18 June 1996) abundances of birds on 4 transect lines in Baker Canyon area, Arizona - New Mexico, based on two types of counts: standard (std) and owl (using Western Screech-owl tape recording). See text for discussion of numbers on "owl counts"; in 1996, this was restricted to the number of new individuals added, i.e. not recorded during the preceding "standard count". Totals for all 4 transects (pooled) are given here. See Table 3 for individual transect data.

	Number of individuals
	Lines A-D
FAMILY & SPECIES	**std, owl**
Ardeidae - Herons	
Great Blue Heron 1995	-
Great Blue Heron 1996	1, 0
Cathartidae - New World Vultures	
Turkey Vulture 1995	4, 2
Turkey Vulture 1996	8, 3
Accipitridae - Kites, Hawks	
American Kestrel 1995	-
American Kestrel 1996	1, 0
Cooper's Hawk 1995	0, 1
Cooper's Hawk 1996	-
Red-tailed Hawk 1995	-
Red-tailed Hawk 1996	1, 0
Zone-tailed Hawk 1995	0, 1
Zone-tailed Hawk 1995	-
Strigidae - Owls	
Western Screech-Owl 1995	-
Western Screech-Owl 1996	0, 3
Phasianidae - Turkey, Quail	
Gambel's Quail 1995	29, 9
Gambel's Quail 1996	78, 11

FAMILY & SPECIES	Lines A-D std, owl
Columbidae - Pigeons, Doves	
Mourning Dove 1995	33, 14
Mourning Dove 1996	34, 3
White-winged Dove 1995	16, 2
White-winged Dove 1996	33, 5
Common Ground-Dove 1995	-
Common Ground-Dove 1996	1, 0
Cuculidae - Cuckoos, Roadrunners	
Greater Roadrunner 1995	2, 2
Greater Roadrunner 1996	4, 2
Caprimulgidae - Nighthawks & Nightjars	
Common Nighthawk 1995	7, 5
Common Nighthawk 1996	17, 11
Poor-will 1995	-
Poor-will 1996	2, 0
Apodidae - Swifts	
White-throated Swift 1995	-
White-throated Swift 1996	6, 1
Trochilidae - Hummingbirds	
Black-chinned Hummingbird '95	1, 2
Black-chinned Hummingbird '96	1, 4
Broad-tailed Hummingbird 1995	0, 1
Broad-tailed Hummingbird 1996	3, 0
Broad-billed Hummingbird 1995	-
Broad-billed Hummingbird 1996	0, 4
unidentified hummingbird 1995	-
unidentified hummingbird 1996	3, 0

FAMILY & SPECIES	Lines A-D std, owl
Picidae - Woodpeckers	
Acorn Woodpecker 1995	0, 1
Acorn Woodpecker 1996	-
Gila Woodpecker 1995	1, 2
Gila Woodpecker 1996	5, 4
Ladder-backed W'pecker 1995	3, 2
Ladder-backed W'pecker 1996	1, 1
unidentified woodpecker 1995	-
unidentified woodpecker 1996	0, 1
Tyrannidae - Tyrant Flycatchers	
Cassin's Kingbird 1995	-
Cassin's Kingbird 1996	0, 2
Black Phoebe 1995	-
Black Phoebe 1996	1, 0
Dusky-capped Flycatcher 1995	1, 0
Dusky-capped Flycatcher 1996	2, 4
Ash-throated Flycatcher 1995	26, 50
Ash-throated Flycatcher 1996	35, 16
Brown-crested Flycatcher 1995	1, 3
Brown-crested Flycatcher 1996	5, 0
Western Wood-Pewee 1995	-
Western Wood-Pewee 1996	1, 0
Corvidae - Jays, Ravens	
Scrub Jay 1995	10, 10
Scrub Jay 1996	8, 6
Chihuahuan Raven 1995	2, 1
Chihuahuan Raven 1996	-

FAMILY & SPECIES	Lines A-D std, owl
Common Raven 1995	1, 0
Common Raven 1996	5, 2
Paridae - Chickadees, Titmice	
Plain Titmouse 1995	0, 1
Plain Titmouse 1996	-
Remizidae - Verdins	
Verdin 1995	6, 7
Verdin 1996	18, 9
Aegithalidae - Bushtits	
Bushtit 1995	0, 12
Bushtit 1996	5, 0
Troglodytidae - Wrens	
Cactus Wren 1995	10, 9
Cactus Wren 1996	16, 8
Rock Wren 1995	4, 2
Rock Wren 1996	8, 4
Canyon Wren 1995	0, 1
Canyon Wren 1996	3, 2
Bewick's Wren 1995	18, 30
Bewick's Wren 1996	38, 29
Muscicapidae - Kinglets, Gnatcatchers, Thrushes	
Black-tailed Gnatcatcher 1995	4, 11
Black-tailed Gnatcatcher 1996	9, 10
Mimidae - Mockingbirds, Thrashers	
Northern Mockingbird 1995	69, 36
Northern Mockingbird 1996	42, 8
Curve-billed Thrasher 1995	--
Curve-billed Thrasher 1996	1, 1

FAMILY & SPECIES	Lines A-D std, owl
Crissal Thrasher 1995	3, 1
Crissal Thrasher 1996	2, 0
Ptilogonatidae - Silky-Flycatchers	
Phainopepla 1995	47, 167
Phainopepla 1996	1, 0
Vireonidae -Vireos	
Bell's Vireo 1995	0, 1
Bell's Vireo 1996	8, 1
Gray Vireo 1995	2, 0
Gray Vireo 1996	2, 5
Emberizidae: Parulinae - Warblers	
Lucy's Warbler 1995	1, 4
Lucy's Warbler 1996	1, 2
Yellow Warbler 1995	-
Yellow Warbler 1996	0, 1
Emberizidae: Thraupinae - Tanagers	
Summer Tanager 1995	1, 1
Summer Tanager 1996	-
Emberizidae: Cardinalinae - Cardinals, Grosbeaks, Buntings	
Northern Cardinal 1995	5, 4
Northern Cardinal 1996	11, 11
Black-headed Grosbeak 1995	--
Black-headed Grosbeak 1996	0, 2
Blue Grosbeak 1995	5, 1
Blue Grosbeak 1996	14, 8
Varied Bunting 1995	5, 5
Varied Bunting 1996	2, 4

FAMILY & SPECIES	Lines A-D std, owl
Emberizidae: Emberizinae - Emberizine Finches	
Spotted (Rufous-s.) Towhee 1995	4, 4
Spotted (Rufous-s.) Towhee 1996	1, 1
Canyon (Brown) Towhee 1995	8, 5
Canyon (Brown) Towhee 1996	29, 9
Rufous-crowned Sparrow 1995	21, 14
Rufous-crowned Sparrow 1996	36, 14
Black-throated Sparrow 1995	9, 15
Black-throated Sparrow 1996	18, 12
Emberizidae: Icterinae - Icterids	
Brown-headed Cowbird 1995	1, 3
Brown-headed Cowbird 1996	14, 6
Hooded Oriole 1995	0, 2
Hooded Oriole 1996	-
Scott's Oriole 1995	0, 1
Scott's Oriole 1996	2, 3
Fringillidae - Finches, Goldfinches	
House Finch 1995	32, 30
House Finch 1996	21, 11
Lesser Goldfinch 1995	2, 0
Lesser Goldfinch 1996	5, 1
Total individuals 1995	349, 270
Total individuals 1996	562, 243
Total species 1995	46
Total species 1996	55
Total species 1995-1996	60
Number of count points	32

	A	B	C	D	E	F	G	H	I	J	K	L
1			date>		Jun-95	Jun-96	Jun-97	Dec-96	Feb-97	Apr-97	May-97	all
2			transect lines>		ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	A*BCD	
3			methods>		std+owl	std+owl	std+owl	std+owl	std+owl	std+owl	std+owl	
4			observers>		SA,SH,	SA,PS	SA,RL	SA,JP	RH,JP	RH	NC,RL	
5	**sort#**	**Family**	**Species**	**sp code**	PS							
6	1	Ardeidae	Great Blue Heron	GBHE		1						1
7	2	Cathartidae	Turkey Vulture	TUVU	9	11	21			12	12	65
8	3	Accipitridae	Cooper's Hawk	COHA	1							1
9	4	Accipitridae	Zone-tailed Hawk	ZTHA	1							1
10	5	Accipitridae	Red-tailed Hawk	RTHA		1	3			1	1	6
11	6	Falconidae	American Kestrel	AMKE		1					2	3
12	6.1	Falconidae	*falcon,unidentified*	UNFA					1			1
13	7	Phasianidae	Wild Turkey	WITU						1		1
14	8	Phasianidae	Gambel's Quail	GAQU	3	86	58	15	2	36	55	255
15	9	Strigidae	Western Screech-owl	WESO		3		1	1	1	1	7
16	10	Columbidae	Mourning Dove	MODO	39	37	17	1	1	33	19	147
17	11	Columbidae	White-winged Dove	WWDO	17	37	2			13	18	87
18	12	Columbidae	Common Ground-Dove	COGD		1						1
19	13	Cuculidae	Greater Roadrunner	GRRO	4	6			3	6	3	22
20	14	Caprimulgidae	Common Nighthawk	CONI	13	23	1					37
21	15	Caprimulgidae	Poor-will	POWI		2						2
22	16	Apodidae	White-throated Swift	WTSW		7				2	3	12
23	17	Trochilidae	Broad-billed Hummingbird	BBHU		4	3			5	6	18
24	18	Trochilidae	Black-chinned Hummingbird	BCHU	3	4				7		14
25	19	Trochilidae	Costa's Hummingbird	COHU						5	2	7
26	20	Trochilidae	Broad-tailed Hummingbird	BTHU	1	3				5	5	14
27	20.1	Trochilidae	Rufous Hummingbird	RUHU						3		3
28	20.2	Trochilidae	*hummingbird, unidentified*	UNHU		3	5			1	4	13
29	21	Picidae	Acorn Woodpecker	ACWO	1							1
30	22	Picidae	Gila Woodpecker	GIWO	2	8	1	3	2	2		18
31	23	Picidae	Red-naped Sapsucker	RNSA				3	1	1		5
32	24	Picidae	Ladder-backed Woodpecker	LBWO	5	2	3		3	2	3	18
33	25	Picidae	Northern Flicker	NOFL				5	5	1	1	12
34	26	Picidae	*woodpecker, unidentified*	UNWO		1	1		1	2	4	9
35	27	Tyrannidae	No. Beardless Tyrannulet	NBTY							1	1
36	27.1	Tyrannidae	Western Wood-Pewee	WWPE		1						1

Baker burn area, AZ-NM
(Cochise/Hidalgo counties)

Peter E. Scott, Indiana State Univ.
DRAFT, 8 Feb 1998

	A	B	C	D	E	F	G	H	I	J	K	L
1			date>		Jun-95	Jun-96	Jun-97	Dec-96	Feb-97	Apr-97	May-97	all
2			transect lines>		ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	A*BCD	
3			methods>		std+owl	std+owl	std+owl	std+owl	std+owl	std+owl	std+owl	
4			observers>		SA,SH,	SA,PS	SA,RL	SA,JP	RH,JP	RH	NC,RL	
5	sort#	Family	Species	sp code	PS							
37	27.2	Tyrannidae	Gray Flycatcher	GRFL					1	14	3	18
38	28	Tyrannidae	Black Phoebe	BLPH		1						1
39	29	Tyrannidae	Say's Phoebe	SAPH					1	1		2
40	30	Tyrannidae	Dusky-capped Flycatcher	DCFL	1	6	2			2	3	14
41	31	Tyrannidae	Ash-throated Flycatcher	ATFL	57	50	41			44	35	227
42	32	Tyrannidae	Brown-crested Flycatcher	BCFL	3	5	4					12
43	33	Tyrannidae	Cassin's Kingbird	CAKI		2				1	5	8
44	34	Hirundinidae	Violet-green Swallow	VGSW						1	1	2
45	35	Corvidae	Scrub Jay	SCJA	15	12	8	9	23	26	6	99
46	36	Corvidae	Chihuahuan Raven	CHRA	3				3			6
47	37	Corvidae	Common Raven	CORA		5	3	2	1		3	14
48	37.1	Corvidae	*raven, unidentified*	UNRA	1				1	5		7
49	38	Paridae	Plain Titmouse	PLTI	1					1		2
50	38.1	Paridae	Bridled Titmouse	BRTI			1	4	2			7
51	39	Remizidae	Verdin	VERD	12	25	7	7	7	21	2	81
52	40	Aegithalidae	Bushtit	BUSH	12	5	15	8	8	8		56
53	41	Troglodytidae	Cactus Wren	CCWR	16	23	16	4	6	29	17	111
54	42	Troglodytidae	Rock Wren	ROWR	5	11	3	4	3	11	3	40
55	43	Troglodytidae	Canyon Wren	CYWR	1	5	8	2		3	4	23
56	44	Troglodytidae	Bewick's Wren	BEWR	33	58	35	21	17	41	27	~~195~~ 232
57	45	Troglodytidae	House Wren	HOWR				1	1	3		5
58	46	Muscicapidae	Ruby-crowned Kinglet	RCKI				13	9	9		31
59	46.1	Muscicapidae	Blue-gray Gnatcatcher	BGGN						1		1
60	47	Muscicapidae	Black-tailed Gnatcatcher	BTGN	1	18	3	4	1		1	28
61	48	Muscicapidae	Western Bluebird	WEBL					4			4
62	49	Muscicapidae	*bluebird, unidentified*	UNBL				4				4
63	50	Muscicapidae	Townsend's Solitaire	TOSO					2			2
64	51	Muscicapidae	Hermit Thrush	HETH				6	3			9
65	51.1	Muscicapidae	American Robin	AMRO						1		1
66	52	Mimidae	Northern Mockingbird	NOMO	75	44	83	2	2	1	44	251
67	53	Mimidae	Sage Thrasher	SATH					1			1

	A	B	C	D	E	F	G	H	I	J	K	L
1			date>		Jun-95	Jun-96	Jun-97	Dec-96	Feb-97	Apr-97	May-97	all
2			transect lines>		ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	A*BCD	
3			methods>		std+owl	std+owl	std+owl	std+owl	std+owl	std+owl	std+owl	
4			observers>		SA,SH,	SA,PS	SA,RL	SA,JP	RH,JP	RH	NC,RL	
5	sort#	Family	Species	sp code	PS							
68	54	Mimidae	Curve-billed Thrasher	CBTH		1						1
69	55	Mimidae	Crissal Thrasher	CRTH	3	2	2	9	14	6	2	38
70	56	Ptiligonatidae	Phainopepla	PHAI	176	1	18	25	4		74	298
71	57	Vireonidae	Bell's Vireo	BEVI	1	11	7			5	4	28
72	58	Vireonidae	Gray Vireo	GRVI	2	7	1			13	4	27
73	59	Vireonidae	Hutton's Vireo	HUVI					2			2
74	59.1	Parulinae	Orange-crowned Warbler	OCWA						2	3	5
75	60	Parulinae	Lucy's Warbler	LUWA	5	3	2			14		24
76	60.1	Parulinae	Yellow-rumped Warbler	YRWA						4	1	5
77	60.2	Parulinae	Black-throated Gray Warbler	BTWA						1		1
78	60.3	Parulinae	Townsend's Warbler	TOWA							1	1
79	60.3	Parulinae	MacGillivray's Warbler	MGWA						1		1
80	60.4	Parulinae	Wilson's Warbler	WIWA						2	1	3
81	61	Parulinae	Yellow Warbler	YEWA		1						1
82	61.1	Parulinae	*warbler, unidentified*	UNWA							1	1
83	62	Thraupinae	Summer Tanager	SUTA	2						2	4
84	63	Cardinalinae	Northern Cardinal	NOCA	8	21	5	1	1	16	8	60
85	63.1	Cardinalinae	Pyrrhuloxia	PYRR			1					1
86	64	Cardinalinae	Black-headed Grosbeak	BHGR		2					7	9
87	65	Cardinalinae	Blue Grosbeak	BLGR	5	22	4					31
88	65.1	Cardinalinae	Lazuli Bunting	LZBU						1		1
89	66	Cardinalinae	Varied Bunting	VABU	8	6	3				2	19
90	66.1	Emberizinae	Green-tailed Towhee	GTTO						9		9
91	67	Emberizinae	Spotted Towhee	SPTO	7	2	1	8	8	6	2	34
92	68	Emberizinae	Canyon Towhee	CNTO	11	37	14	2	13	1	2	80
93	68.1	Emberizinae	Botteri's Sparrow	BOSP							1	1
94	69	Emberizinae	Rufous-crowned Sparrow	RCSP	28	48	36	8	16	3	35	174
95	70	Emberizinae	Chipping Sparrow	CHSP				248	275	136		659
96	71	Emberizinae	Brewer's Sparrow	BRSP				8	1	11		20
97	72	Emberizinae	Black-chinned Sparrow	BCSP				1	8	1		10
98	73	Emberizinae	Vesper Sparrow	VESP					1			1

Baker burn area, AZ-NM
(Cochise/Hidalgo counties)

Peter E. Scott, Indiana State Univ.
DRAFT, 8 Feb 1998

	A	B	C	D	E	F	G	H	I	J	K	L
1			date>		Jun-95	Jun-96	Jun-97	Dec-96	Feb-97	Apr-97	May-97	all
2			transect lines>		ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	A*BCD	
3			methods>		std+owl	std+owl	std+owl	std+owl	std+owl	std+owl	std+owl	
4			observers>		SA,SH,	SA,PS	SA,RL	SA,JP	RH,JP	RH	NC,RL	
5	sort#	Family	Species	sp code	PS							
99	73.1	Emberizinae	Lark Sparrow	LASP						1		1
100	74	Emberizinae	Black-throated Sparrow	BTSP	22	27	21	17	3	17	16	123
101	75	Emberizinae	Lincoln's Sparrow	LISP				3	3	2		8
102	75.1	Emberizinae	Golden-crowned Sparrow	GCSP						1		1
103	76	Emberizinae	White-crowned Sparrow	WCSP				73	16	8	1	98
104	77	Emberizinae	Dark-eyed Junco	DEJU				197	85	4		286
105	78	Emberizinae	*sparrow/junco, unidentified*	UNSP				37	21			58
106	79	Icterinae	Brown-headed Cowbird	BHCO	4	2	4				4	14
107	80	Icterinae	Hooded Oriole	HOOR	2					2		4
108	80.1	Icterinae	Bullock's Oriole	BUOR			1					1
109	81	Icterinae	Scott's Oriole	SCOR	1	3	4			4	4	16
110	82	Fringillidae	Cassin's Finch	CAFI				2		4	3	9
111	83	Fringillidae	House Finch	HOFI	45	31	48	2	26	34	19	205
112	83.1	Fringillidae	Pine Siskin	PISI						4	9	13
113	84	Fringillidae	Lesser Goldfinch	LEGO	2	6	1			1	9	19
114									676			
115			total individuals		667	745	517	760	~~613~~	639	527	~~4468~~ 4505
116			total species		45	53	41	35	43	67	53	101
117			count points		32	32	32	32	32	32	(27,24)	